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EXAMINER	
ROE, JESSEE RANDALL	
ART UNIT	**PAPER NUMBER**
1793	

MAIL DATE	DELIVERY MODE
04/29/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/533,850	FLAHAUT, DOMINIQUE
	Examiner	**Art Unit**
	Jessee Roe	1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 January 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14,18-21,23,24,26-43,45,48,49,51-57,60 and 61* is/are pending in the application.

4a) Of the above claim(s) *23,24,26-43,45,48,49,51-54,56 and 57* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14,18-21,55,60 and 61* is/are rejected.

7)☒ Claim(s) *21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of the Claims

Claims 1-14, 18-21, 23-24, 26-43, 45, 48-49, 51-57 and 60-61 are pending wherein claims 1-4, 14,18-21, 55 and 60-61 are amended, claims 15-17, 22, 25, 44, 46-47, 50 and 58-59 are canceled, and claims 23-24, 26-43, 45, 48-49, 51-54 and 56-57 are withdrawn from consideration.

Terminal Disclaimer

The terminal disclaimer filed on 19 January 2009 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent Application No. 10/533,034 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Status of Previous Objections

The previous objection to claims 14, 18-19, 21, 55, and 60-61 under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot serve as a basis for another multiple dependent claim is withdrawn in view of the Applicant's amendments to claims.

Status of Previous Rejections

The previous rejection of claim 20 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to point out and distinctly claim the subject matter which

Applicant regards as the invention is withdrawn in view of the Applicant's amendment to the claim. The previous rejection of claims 1, 10 and 15 under 35 U.S.C. 103(a) as being unpatentable over Klöwer (US 5,851,318) with evidence from Deevi et al. (ExoMelt^{TM} process for melting and casting intermetallics) in view of Ritzert et al. (Single crystal fibers of yttria-stabilized cubic zirconia with ternary oxide additions) is withdrawn in view of the Applicant’s arguments. The previous rejection of claim 1-3, 11,15 and 16-19 under 35 U.S.C. 101 as claiming the same invention as that of claims 42-44, 49 and 52-57 of copending Application No. 10/533,034 is withdrawn in view of the Terminal Disclaimer filed on 19 January 2009.

Claim Objections

Claim 21 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

In regards to claim 21, claims 3, 5 and 7 require a carbon range of 0.3 to 0.7 weight percent whereas claim 21’s reference to the Examples would allow for carbon at 0.04 to 0.08 weight percent (Example 3) and would therefore fail to further limit claim 3.

Still regarding claim 21, claims 4, 6 and 8 require a carbon range of 0.03 to 0.20 weight percent whereas claim 21’s reference to the Examples would allow for carbon at 0.40 weight percent (Example 1) and would therefore fail to further limit claim 4.

Still regarding claim 21, claims 11 and 12 require a carbon range of 0.3 to 0.6 weight percent carbon whereas claim 21's reference to the Examples would allow for carbon at 0.04 to 0.08 weight percent (Example 3) and would therefore fail to further limit claim 11.

Still regarding 21, the alloys set forth in claim 20 have a narrower scope than the alloys set forth in Examples 1-4. Therefore, claim 21 fails to further limit claim 20.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 18-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to the recitation "the hafnium is present in the alloy in the form of finely divided oxidised particles having an average particle size of from 50 microns to 0.25 microns, or less" in claim 18, it is unclear whether the average particle size is in the range of 50 microns to 0.25 microns as in claim 18 or has an average particle size less than this range

With respect to the recitation "the hafnium is present in the alloy in the form of finely divided oxidised particles having an average particle size of from 5 microns to 0.25 microns, or less" in claim 19, it is unclear whether the average particle size is in the

range of 5 microns to 0.25 microns as in claim 19 or has an average particle size less than this range

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 9, 11-13, 18-19, 55 and 60-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kleeman (US 6,409,847) with evidence from Deevi et al. (Exo-Melt™ process for melting and casting intermetallics).and http://dictionary.reference.com/browse/superalloy in view of Ritzert et al. (Single crystal fibers of yttria-stabilized cubic zirconia with ternary oxide additions).

In regards to claim 1, Kleeman ('847) discloses a nickel-chromium-iron alloy composition having high hot strength (abstract). The table below provides the relative comparison of the alloy disclosed by Kleeman ('847) with the alloy of the instant invention.

Element	**Instant Claims (weight percent)**	**Kleeman ('847) (weight percent)**	**Overlap (weight percent)**
C	0.01 – 0.7	0.3 – 1.0	0.3 – 0.7
Si	0.1 – 3.0	0.2 – 2.5	0.2 – 2.5
Mn	0 – 2.5	0 – 0.8	0 – 0.8
Ni	15 – 90	30 – 48	30 – 48
Cr	5 – 40	16 – 22	16 – 22
Mo	0 – 3.0	1.5 – 4.0	1.5 – 3.0
Nb	0 – 2.0	0.2 – 0.6	0.2 – 0.6
Ta	0 – 2.0	0.1 – 1.5	0.1 – 1.5
Ti	0 – 2.0	0.1 – 0.5	0.1 – 0.5
Zr	0 – 2.0	0.1 – 0.6	0.1 – 0.6
Co	0 – 2.05	0.5 – 18	0.5 – 2.05

Element	Instant Claims (weight percent)	Kleeman ('847) (weight percent)	Overlap (weight percent)
W	0 – 4.0	0	0
Hf	0.01 – 4.5	0.1 – 1.5	0.1 – 1.5
Al	0 – 15	1.5 – 2.5	1.5 – 2.5
N	0.001 – 0.5	-	-
O	0.001 – 0.7	-	-
Fe	Balance	more than 30	Balance

Kleeman ('847) discloses a nickel-chromium-iron alloy composition that would be made by melting and casting (col. 2, lines 39-46) as shown on the previous page, but Kleeman ('847) does not specify the amounts of impurities (nitrogen and oxygen) that would be expected from casting.

Deevi et al. discloses nickel-based alloys having high temperature corrosion made by melting and conventional casting techniques that would have 0.013 weight percent oxygen and 0.013 weight percent nitrogen (page 17, column 2 and page 25, column 2).

Therefore, it would be expected that the nickel-chromium-iron alloy made by melting and casting disclosed by Kleeman ('847), would also have 0.013 weight percent oxygen and 0.013 weight percent nitrogen, as disclosed by Deevi et al., because Deevi et al. teaches that melting and casting would result in the occurrence of impurities such as oxygen and nitrogen in the above specified amounts (page 17, column 2 and page 25, column 2).

Kleeman ('847) with evidence from Deevi et al. discloses a nickel-chromium-iron alloy composition with oxygen and nitrogen impurities as shown above, but Kleeman ('847) with evidence from Deevi et al. does not specify that the nickel-chromium-iron alloy composition would be a superallloy.

http://dictionary.reference.com/browse/superalloy teaches that a superalloy would often have a nickel, nickel-iron, or cobalt base and be capable of withstanding high temperatures.

Thus, the nickel-chromium-iron alloy disclosed by Kleeman ('847) with evidence from Deevi et al., would be a superalloy because http://dictionary.reference.com/browse/superalloy teaches that a superalloy would often have a nickel, nickel-iron, or cobalt base and be capable of withstanding high temperatures and the nickel–chromium-iron alloy disclosed by Kleeman ('847) with evidence from Deevi et al. would meet both prongs of the definition of a "superalloy".

Kleeman ('847) with evidence from Deevi et al. and http://dictionary.reference.com/browse/superalloy discloses a nickel-chromium-iron alloy composition having niobium, titanium and zirconium present as shown above, but Kleeman ('847) with evidence from Deevi et al. and http://dictionary.reference.com/browse/superalloy does not specify "that at least part of the hafnium is present as finely divided oxide particles".

Ritzert et al. discloses adding high purity fine particles such as hafnium oxide to superalloys that would be used in high temperature environments such as turbines in order to improve high temperature reinforcement (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

Therefore, it would have been obvious to one of ordinary skill in the art at

the time the invention was made to have added high purity fine particles such as hafnium oxide, as disclosed by Ritzert et al., to the high temperature alloy, as disclosed by Kleeman ('847) with evidence from Deevi et al. and http://dictionary.reference.com/browse/superalloy, in order to improve high temperature reinforcement, as disclosed by Ritzert et al. (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

In regards to claim 9, Kleeman ('847) discloses 0.3 to 1.0 weight percent carbon, which reads on the range of 0.3 to 0.5 weight percent carbon, as instantly claimed.

In regards to claim 11, Kleeman ('847) discloses 0.3 to 1.0 weight percent carbon and 0.1 to 1.5 weight percent hafnium, which overlap the ranges of 0.3 to 0.6 weight percent carbon and 0.01 to 3.0 weight percent hafnium as instantly claimed.

In regards to claim 12, Kleeman ('847) discloses 0.3 to 1.0 weight percent carbon and 0.1 to 1.5 weight percent hafnium, which read on the ranges of 0.3 to 0.6 weight percent carbon and 0.1 to 1.0 weight percent hafnium as instantly claimed.

In regards to claim 13, Kleeman ('847) discloses 0.3 to 1.0 weight percent carbon and 0.1 to 1.5 weight percent hafnium, which read on the ranges of 0.3 to 0.6 weight percent carbon and 0.2 to 0.5 weight percent hafnium as instantly

claimed.

In regards to claims 18-19, Ritzert et al. discloses that the high purity fine oxide particles would be less than 325 mesh (less than 44 microns), which overlaps the ranges of the sizes of the particles of the instant invention (column 1; page 5341).

In regards to claims 55 and 60-61, Kleeman (‘847) discloses using the alloy for pipes (tubes) (abstract).

With respect to the processing limitation “by rotational moulding” in claims 55 and 60 and “produced by a method according to any one of claims 26 to 51" in claim 61, the Examiner notes that the claim is drawn to product and not a process. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. MPEP 2113.

Claims 2, 18-19, 55 and 60-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kleeman (US 6,409,847) with evidence from http://dictionary.reference.com/browse/superalloy in view of Ritzert et al. (Single crystal fibers of yttria-stabilized cubic zirconia with ternary oxide additions).

In regards to claim 2, Kleeman (‘847) discloses a nickel-chromium-iron alloy composition having high hot strength (abstract). The table on the following page provides the relative comparison of the alloy disclosed by Kleeman (‘847) with the alloy

of the instant invention.

Element	Instant Claims (weight percent)	Kleeman ('847) (weight percent)	Overlap (weight percent)
C	0.01 – 0.5	0.3 – 1.0	0.3 – 0.5
Si	0.01 – 3.0	0.2 – 2.5	0.2 – 2.5
Mn	0 – 2.5	0 – 0.8	0 – 0.8
Ni	15 – 50	30 – 48	30 – 48
Cr	20 – 40	16 – 22	20 – 22
Mo	0 – 3.0	1.5 – 4.0	1.5 – 3.0
Nb	0 – 2.0	0.2 – 0.6	0.2 – 0.6
Ta	0 – 2.0	0.1 – 1.5	0.1 – 1.5
Ti	0 – 2.0	0.1 – 0.5	0.1 – 0.5
Zr	0 – 2.0	0.1 – 0.6	0.1 – 0.6
Co	0 – 2.05	0.5 – 18	0.5 – 2.0
W	0 – 4.0	0	0
Hf	0.01 – 4.5	0.1 – 1.5	0.1 – 1.5
Fe	Balance	more than 30	Balance

The Examiner notes that the amounts of carbon, silicon, manganese, nickel, chromium, molybdenum, niobium, tantalum, titanium, zirconium, cobalt, tungsten, hafnium and iron disclosed by Kleeman ('847) overlap the amounts claimed in the instant invention, which is prima facie evidence of obviousness. MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the claimed amounts of carbon, silicon, manganese, nickel, chromium, molybdenum, niobium, tantalum, titanium, zirconium, cobalt, tungsten, hafnium and iron from the amounts disclosed by Kleeman ('847) because Kleeman ('847) discloses the same utility throughout the disclosed ranges.

Kleeman ('847) discloses a nickel-chromium-iron alloy composition as shown above, but Kleeman ('847) does not specify that the nickel-chromium-iron alloy composition would be a superallloy.

http://dictionary.reference.com/browse/superalloy teaches that a superalloy would often have a nickel, nickel-iron, or cobalt base and be capable of withstanding high temperatures.

Thus, the nickel-chromium-iron alloy disclosed by Kleeman (‘847), would be a superalloy because http://dictionary.reference.com/browse/superalloy teaches that a superalloy would often have a nickel, nickel-iron, or cobalt base and be capable of withstanding high temperatures and the nickel–chromium-iron alloy disclosed by Kleeman (‘847) would meet both prongs of the definition of a “superalloy”.

Kleeman (‘847) with evidence from http://dictionary.reference.com/browse/superalloy discloses a nickel-chromium-iron alloy composition having niobium, titanium and zirconium present as shown above, but Kleeman (‘847) with evidence from http://dictionary.reference.com/browse/superalloy does not specify "that at least part of the hafnium is present as finely divided oxide particles".

Ritzert et al. discloses adding high purity fine particles such as hafnium oxide to superalloys that would be used in high temperature environments in order to improve high temperature reinforcement (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added high purity fine particles such as hafnium oxide, as disclosed by Ritzert et al., to the high temperature alloy, as

disclosed by Kleeman (‘847) with evidence from http://dictionary.reference.com/browse/superalloy, in order to improve high temperature reinforcement, as disclosed by Ritzert et al. (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

In regards to claims 18-19, Ritzert et al. discloses that the high purity fine oxide particles would be less than 325 mesh (less than 44 microns), which overlaps the ranges of the sizes of the particles of the instant invention (column 1; page 5341).

In regards to claims 55 and 60-61, Kleeman (‘847) discloses using the alloy for pipes (tubes) (abstract).

With respect to the processing limitation “by rotational moulding” in claims 55 and 60 and “produced by a method according to any one of claims 26 to 51" in claim 61, the Examiner notes that the claim is drawn to product and not a process. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. MPEP 2113.

Claims 1, 10, 18-19, 55 and 60-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barraclough (GB 2 083 499) with evidence from Deevi et al. (Exo-Melt^{TM} process for melting and casting intermetallics).and

http://dictionary.reference.com/browse/superalloy in view of Ritzert et al. (Single crystal fibers of yttria-stabilized cubic zirconia with ternary oxide additions).

In regards to claim 1, Barraclough (GB '499) discloses a nickel-chromium-iron alloy composition having hot strength (abstract). The table below provides the relative comparison of the alloy disclosed by Barraclough (GB '499) with the alloy of the instant invention.

Element	**Instant Claims (weight percent)**	**Barraclough (GB '499) (weight percent)**	**Overlap (weight percent)**
C	0.01 – 0.7	0.02 – 0.15	0.02 – 0.15
Si	0.1 – 3.0	0.2 – 2.0	0.2 – 2.0
Mn	0 – 2.5	0.2 – 2.0	0.2 – 2.0
Ni	15 – 90	15 – 20	15 – 20
Cr	5 – 40	15 – 25	15 – 25
Mo	0 – 3.0	0	0
Nb	0 – 2.0	0	0
Ta	0 – 2.0	0	0
Ti	0 – 2.0	0.1 – 0.8	0.1 – 0.8
Zr	0 – 2.0	optional (0 – 0.8)	optional (0 – 0.8)
Co	0 – 2.05	0	0
W	0 – 4.0	0	0
Hf	0.01 – 4.5	0 – 0.8	0.01 – 0.8
Al	0 – 15	2 – 4	2 – 4
N	0.001 – 0.5	-	-
O	0.001 – 0.7	-	-
Fe	Balance	Balance	Balance

Barraclough (GB '499) discloses a nickel-chromium-iron alloy composition that would be made by melting and casting (abstract and page 1, lines 39-50) as shown above, but Barraclough (GB '499) does not specify the amounts of impurities (nitrogen and oxygen) that would be expected from casting.

Deevi et al. discloses nickel-based alloys having high temperature

corrosion made by melting and conventional casting techniques that would have 0.013 weight percent oxygen and 0.013 weight percent nitrogen (page 17, column 2 and page 25, column 2).

Therefore, it would be expected that the nickel-chromium-iron alloy made by melting and casting, as disclosed by Barraclough (GB '499), would also have 0.013 weight percent oxygen and 0.013 weight percent nitrogen, as disclosed by Deevi et al., because Deevi et al. teaches that melting and casting would result in the occurrence of impurities such as oxygen and nitrogen in the above specified amounts (page 17, column 2 and page 25, column 2).

Barraclough (GB '499) with evidence from Deevi et al. discloses a nickel-chromium-iron alloy composition with oxygen and nitrogen impurities as shown above, but Barraclough (GB '499) with evidence from Deevi et al. does not specify that the nickel-chromium-iron alloy composition would be a superallloy.

http://dictionary.reference.com/browse/superalloy teaches that a superalloy would often have a nickel, nickel-iron, or cobalt base and be capable of withstanding high temperatures.

Thus, the nickel-chromium-iron alloy disclosed by Barraclough (GB '499) with evidence from Deevi et al, would be a superalloy because http://dictionary.reference.com/browse/superalloy teaches that a superalloy would often have a nickel, nickel-iron, or cobalt base and be capable of withstanding high temperatures and the nickel–chromium-iron alloy disclosed by Barraclough (GB '499) with evidence from Deevi would meet both prongs of the

definition of a “superalloy”.

Barraclough (GB '499) with evidence from Deevi et al. and http://dictionary.reference.com/browse/superalloy discloses a nickel-chromium-iron alloy composition having titanium and/or zirconium present as shown above, but Barraclough (GB '499) with evidence from Deevi et al. and http://dictionary.reference.com/browse/superalloy does not specify "that at least part of the hafnium is present as finely divided oxide particles".

Ritzert et al. discloses adding high purity fine particles such as hafnium oxide to superalloys that would be used in high temperature environments in order to improve high temperature reinforcement (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added high purity fine particles such as hafnium oxide, as disclosed by Ritzert et al., to the high temperature alloy, as disclosed by Barraclough (GB '499) with evidence from Deevi et al. and http://dictionary.reference.com/browse/superalloy, in order to improve high temperature reinforcement, as disclosed by Ritzert et al. (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

In regards to claim 10, Barraclough (GB '499) discloses 0.02 to 0.15 weight percent carbon, which overlaps the range of 0.03 to 0.2 weight percent carbon as instantly claimed.

In regards to claims 18-19, Ritzert et al. discloses that the high purity fine oxide particles would be less than 325 mesh (less than 44 microns), which overlaps the ranges of the sizes of the particles of the instant invention (column 1; page 5341).

In regards to claims 55 and 60-61, Barraclough (GB '499) discloses using the alloy for tubes (claim 11).

With respect to the processing limitation “by rotational moulding” in claims 55 and 60 and “produced by a method according to any one of claims 26 to 51" in claim 61, the Examiner notes that the claim is drawn to product and not a process. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. MPEP 2113.

Claims 2, 18-19, 55 and 60-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barraclough (GB 2 083 499) with evidence from http://dictionary.reference.com/browse/superalloy in view of Ritzert et al. (Single crystal fibers of yttria-stabilized cubic zirconia with ternary oxide additions).

In regards to claim 2, Barraclough (GB ‘499) discloses a nickel-chromium-iron alloy composition having high hot strength (abstract). The table on the following page provides the relative comparison of the alloy disclosed by Barraclough (GB ‘499)

with the alloy of the instant invention.

Element	Instant Claims (weight percent)	Barraclough (GB '499) (weight percent)	Overlap (weight percent)
C	0.01 – 0.5	0.02 – 0.15	0.02 – 0.15
Si	0.01 – 3.0	0.2 – 2.0	0.2 – 2.0
Mn	0 – 2.5	0.2 – 2.0	0.2 – 2.0
Ni	15 – 90	15 – 20	15 – 20
Cr	20 – 40	15 – 25	15 – 25
Mo	0 – 3.0	0	0
Nb	0 – 2.0	0	0
Ta	0 – 2.0	0	0
Ti	0 – 2.0	0.1 – 0.8	0.1 – 0.8
Zr	0 – 2.0	optional (0 – 0.8)	optional (0 – 0.8)
Co	0 – 2.05	0	0
W	0 – 4.0	0	0
Hf	0.01 – 4.5	0 – 0.8	0.01 – 0.8
Fe	Balance	Balance	Balance

The Examiner notes that the amounts of carbon, silicon, manganese, nickel, chromium, molybdenum, niobium, tantalum, titanium, zirconium, cobalt, tungsten, hafnium and iron disclosed by Barraclough (GB ‘499) overlap the amounts claimed in the instant invention, which is prima facie evidence of obviousness. MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the claimed amounts of carbon, silicon, manganese, nickel, chromium, molybdenum, niobium, tantalum, titanium, zirconium, cobalt, tungsten, hafnium and iron from the amounts disclosed by Barraclough (GB ‘499) because Barraclough (GB ‘499) discloses the same utility throughout the disclosed ranges.

Barraclough (GB ‘499) discloses a nickel-chromium-iron alloy composition as shown above, but Barraclough (GB ‘499) does not specify that the nickel-chromium-iron alloy composition would be a superallloy.

http://dictionary.reference.com/browse/superalloy teaches that a superalloy would often have a nickel, nickel-iron, or cobalt base and be capable of withstanding high temperatures.

Thus, the nickel-chromium-iron alloy disclosed by Barraclough (GB '499) would be a superalloy because http://dictionary.reference.com/browse/superalloy teaches that a superalloy would often have a nickel, nickel-iron, or cobalt base and be capable of withstanding high temperatures and the nickel–chromium-iron alloy disclosed by Barraclough (GB '499) would meet both prongs of the definition of a “superalloy”.

Barraclough (GB '499) with evidence from http://dictionary.reference.com/browse/superalloy discloses a nickel-chromium-iron alloy composition having titanium and/or zirconium present as shown above, but Barraclough (GB '499) with evidence from http://dictionary.reference.com/browse/superalloy does not specify "that at least part of the hafnium is present as finely divided oxide particles".

Ritzert et al. discloses adding high purity fine particles such as hafnium oxide to superalloys that would be used in high temperature environments in order to improve high temperature reinforcement (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added high purity fine particles such as hafnium oxide, as disclosed by Ritzert et al., to the high temperature alloy, as

disclosed by Barraclough (GB '499) with evidence from http://dictionary.reference.com/browse/superalloy, in order to improve high temperature reinforcement, as disclosed by Ritzert et al. (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

In regards to claims 18-19, Ritzert et al. discloses that the high purity fine oxide particles would be less than 325 mesh (less than 44 microns), which overlaps the ranges of the sizes of the particles of the instant invention (column 1; page 5341).

In regards to claims 55 and 60-61, Barraclough (GB '499) discloses using the alloy for tubes (claim 11).

With respect to the processing limitation “by rotational moulding” in claims 55 and 60 and “produced by a method according to any one of claims 26 to 51" in claim 61, the Examiner notes that the claim is drawn to product and not a process. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. MPEP 2113.

Claims 1, 3-6, 8-14, 18-19 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herchenroeder (GB 1 373 386) with evidence from Deevi et al. (Exo-Melt^{TM} process for melting and casting intermetallics) in view of

Ritzert et al. (Single crystal fibers of yttria-stabilized cubic zirconia with ternary oxide additions).

In regards to claim 1, Herchenroeder (GB '386) discloses a nickel-chromium-iron alloy composition having high hot strength (page 1, lines 12-25, page 1,line 43 – page 2, line 38). The table below provides the relative comparison of the alloy disclosed by Herchenroeder (GB '386) with the alloy of the instant invention.

Element	**Instant Claims (weight percent)**	**Herchenroeder (GB '386) (weight percent)**	**Overlap (weight percent)**
C	0.01 – 0.7	0 – 1	0.01 – 0.7
Si	0.1 – 3.0	0.2 – 2.5	0.2 – 2.5
Mn	0 – 2.5	0.5 – 2.0	0.5 – 2.0
Ni + Co	15 – 92.05	38 – 72	38 – 72
Cr	5 – 40	15 – 29	15 – 29
Mo	0 – 3.0	0 – 5	0 – 3.0
Zr+Ti+Nb+Hf	0.01 – 10.5	0 – 2.0	0.01 – 2.0
W	0 – 4.0	0 – 5	0 – 4.0
Al	0 – 15	0 – 0.22	0 – 0.22
N	0.001 – 0.5	-	-
O	0.001 – 0.7	-	-
Fe	Balance	12 – 35	Balance

Herchenroeder (GB '386) discloses a nickel-chromium-iron alloy composition that would be made by melting and casting (page 2, lines 39-65 and Examples I-II) as shown above, but Herchenroeder (GB '386) does not specify the amounts of impurities (nitrogen and oxygen) that would be expected from casting.

Deevi et al. discloses nickel-based alloys having high temperature corrosion made by melting and conventional casting techniques that would have 0.013 weight percent oxygen and 0.013 weight percent nitrogen (page 17, column 2 and page 25, column 2).

Therefore, it would be expected that the nickel-chromium-iron alloy made by melting and casting, as disclosed by Herchenroeder (GB ‘386), would also have 0.013 weight percent oxygen and 0.013 weight percent nitrogen, as disclosed by Deevi et al., because Deevi et al. teaches that melting and casting would result in the occurrence of impurities such as oxygen and nitrogen in the above specified amounts (page 17, column 2 and page 25, column 2).

Herchenroeder (GB ‘386) with evidence from Deevi et al. discloses a nickel-chromium-iron superalloy composition having niobium, titanium and zirconium present as shown above, but Herchenroeder (GB ‘386) with evidence from Deevi et al. does not specify "that at least part of the hafnium is present as finely divided oxide particles".

Ritzert et al. discloses adding high purity fine particles such as hafnium oxide to superalloys that would be used in high temperature environments in order to improve high temperature reinforcement (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added high purity fine particles such as hafnium oxide, as disclosed by Ritzert et al., to the high temperature alloy, as disclosed by Herchenroeder (GB ‘386) with evidence from Deevi et al., in order to improve high temperature reinforcement, as disclosed by Ritzert et al. (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

In regards to claim 3, Herchenroeder (GB '386) with evidence from Deevi et al. discloses a nickel-chromium-iron alloy composition having high hot strength (page 1, lines 12-25, page 1,line 43 – page 2, line 38). The table below provides the relative comparison of the alloy disclosed by Herchenroeder (GB '386) with the alloy of the instant invention.

Element	**Instant Claims (weight percent)**	**Herchenroeder (GB '386) with evidence from Deevi et al. (weight percent)**	**Overlap (weight percent)**
C	0.3 – 0.7	0 – 1	0.3 – 0.7
Si	0.1 – 2.5	0.2 – 2.5	0.2 – 2.5
Mn	0 – 2.5	0.5 – 2.0	0.5 – 2.0
Ni + Co	30 – 42	38 – 72	38 – 42
Cr	20 – 30	15 – 29	20 – 29
Mo	0 – 3.0	0 – 5	0 – 3.0
Zr+Ti+Nb+Hf	0.01 – 7.5	0 – 2.0	0.01 – 2.0
W	0 – 1.0	0 – 5	0 – 1.0
N	0.001 – 0.5	0.013	0.013
O	0.001 – 0.7	0.013	0.013
Fe	Balance	12 – 35	Balance

Still regarding claim 3, Ritzert et al. discloses adding high purity fine particles such as hafnium oxide to superalloys that would be used in high temperature environments in order to improve high temperature reinforcement (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

In regards to claim 4, Herchenroeder (GB '386) with evidence from Deevi et al. discloses a nickel-chromium-iron alloy composition having high hot strength (page 1, lines 12-25, page 1,line 43 – page 2, line 38). The table on the following page provides the relative comparison of the alloy disclosed by Herchenroeder (GB '386) with the alloy of the instant invention.

Element	Instant Claims (weight percent)	Herchenroeder (GB '386) with evidence from Deevi et al. (weight percent)	Overlap (weight percent)
C	0.03 – 0.2	0 – 1	0.03 – 0.2
Si	0.1 – 0.25	0.2 – 2.5	0.2 – 0.25
Mn	0 – 2.5	0.5 – 2.0	0.5 – 2.0
Ni + Co	30 – 42	38 – 72	38 – 42
Cr	20 – 30	15 – 29	20 – 29
Mo	0 – 3.0	0 – 5	0 – 3.0
Zr+Ti+Nb+Hf	0.01 – 8.2	0 – 2.0	0.01 – 2.0
W	0 – 1.0	0 – 5	0 – 1.0
N	0.001 – 0.5	0.013	0.013
O	0.001 – 0.7	0.013	0.013
Fe	Balance	12 – 35	Balance

Still regarding claim 4, Ritzert et al. discloses adding high purity fine particles such as hafnium oxide to superalloys that would be used in high temperature environments in order to improve high temperature reinforcement (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

In regards to claim 5, Herchenroeder (GB '386) with evidence from Deevi et al. discloses a nickel-chromium-iron alloy composition having high hot strength (page 1, lines 12-25, page 1,line 43 – page 2, line 38). The table below provides the relative comparison of the alloy disclosed by Herchenroeder (GB '386) with the alloy of the instant invention.

Element	Instant Claims (weight percent)	Herchenroeder (GB '386) with evidence from Deevi et al. (weight percent)	Overlap (weight percent)
C	0.3 – 0.7	0 – 1	0.3 – 0.7
Si	0.01 – 2.5	0.2 – 2.5	0.2 – 2.5
Mn	0 – 2.5	0.5 – 2.0	0.5 – 2.0
Ni + Co	40 – 62	38 – 72	38 – 62
Cr	30 – 40	15 – 29	-
Mo	0 – 3.0	0 – 5	0 – 3.0
Zr+Ti+Nb+Hf	0.01 – 8.5	0 – 2.0	0.01 – 2.0

Element	Instant Claims (weight percent)	Herchenroeder (GB '386) with evidence from Deevi et al. (weight percent)	Overlap (weight percent)
W	0 – 1.0	0 – 5	0 – 1.0
N	0.001 – 0.5	0.013	0.013
O	0.001 – 0.7	0.013	0.013
Fe	Balance	12 – 35	Balance

The Examiner notes that the amounts of carbon, silicon, manganese, nickel, cobalt, molybdenum, zirconium, titanium, niobium, hafnium, tungsten, nitrogen, oxygen and iron disclosed by Herchenroeder (GB '386) with evidence from Deevi et al. overlaps the claimed amounts of carbon, silicon, manganese, nickel, cobalt, molybdenum, zirconium, titanium, niobium, hafnium, tungsten, nitrogen, oxygen and iron of the instant invention. With respect to the claimed range of chromium, It has been held that "a prima facie case of obviousness exists when the claimed range and the prior art range do not overlap but are close enough such that one skilled in the art would have expected them to have the same properties." MPEP 2144.05 I.

Herchenroeder (GB '386) with evidence from Deevi et al. discloses a nickel-chromium-iron superalloy composition having niobium, titanium and zirconium present as shown above, but Herchenroeder (GB '386) with evidence from Deevi et al. does not specify "that at least part of the hafnium is present as finely divided oxide particles".

Ritzert et al. discloses adding high purity fine particles such as hafnium oxide to superalloys that would be used in high temperature environments in order to improve high temperature reinforcement (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added high purity fine particles such as hafnium oxide, as disclosed by Ritzert et al., to the high temperature alloy, as disclosed by Herchenroeder (GB ‘386) with evidence from Deevi et al., in order to improve high temperature reinforcement, as disclosed by Ritzert et al. (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

In regards to claim 6, Herchenroeder (GB ‘386) with evidence from Deevi et al. discloses a nickel-chromium-iron alloy composition having high hot strength (page 1, lines 12-25, page 1,line 43 – page 2, line 38). The table below provides the relative comparison of the alloy disclosed by Herchenroeder (GB ‘386) with the alloy of the instant invention.

Element	**Instant Claims (weight percent)**	**Herchenroeder (GB ‘386) with evidence from Deevi et al. (weight percent)**	**Overlap (weight percent)**
C	0.03 – 0.2	0 – 1	0.03 – 0.2
Si	0.1 – 2.5	0.2 – 2.5	0.2 – 2.5
Mn	0 – 2.5	0.5 – 2.0	0.5 – 2.0
Ni + Co	40 – 52	38 – 72	38 – 52
Cr	30 – 40	15 – 29	-
Mo	0 – 3.0	0 – 5	0 – 3.0
Zr+Ti+Nb+Hf	0.01 – 7.5	0 – 2.0	0.01 – 2.0
W	0 – 1.0	0 – 5	0 – 1.0
N	0.001 – 0.5	0.013	0.013
O	0.001 – 0.7	0.013	0.013
Fe	Balance	12 – 35	Balance

The Examiner notes that the amounts of carbon, silicon, manganese, nickel, cobalt, molybdenum, zirconium, titanium, niobium, hafnium, tungsten, nitrogen, oxygen and iron disclosed by Herchenroeder (GB ‘386) with evidence

from Deevi et al. overlaps the claimed amounts of carbon, silicon, manganese, nickel, cobalt, molybdenum, zirconium, titanium, niobium, hafnium, tungsten, nitrogen, oxygen and iron of the instant invention. With respect to the claimed range of chromium, It has been held that "a prima facie case of obviousness exists when the claimed range and the prior art range do not overlap but are close enough such that one skilled in the art would have expected them to have the same properties." MPEP 2144.05 I.

Herchenroeder (GB ‘386) with evidence from Deevi et al. discloses a nickel-chromium-iron superalloy composition having niobium, titanium and zirconium present as shown above, but Herchenroeder (GB ‘386) with evidence from Deevi et al. does not specify "that at least part of the hafnium is present as finely divided oxide particles".

Ritzert et al. discloses adding high purity fine particles such as hafnium oxide to superalloys that would be used in high temperature environments in order to improve high temperature reinforcement (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added high purity fine particles such as hafnium oxide, as disclosed by Ritzert et al., to the high temperature alloy, as disclosed by Herchenroeder (GB ‘386) with evidence from Deevi et al., in order to improve high temperature reinforcement, as disclosed by Ritzert et al. (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page

5346, column 1).

In regards to claim 8, Herchenroeder (GB '386) with evidence from Deevi et al. discloses a nickel-chromium-iron alloy composition having high hot strength (page 1, lines 12-25, page 1,line 43 – page 2, line 38). The table below provides the relative comparison of the alloy disclosed by Herchenroeder (GB '386) with the alloy of the instant invention.

Element	Instant Claims (weight percent)	Herchenroeder (GB '386) with evidence from Deevi et al. (weight percent)	Overlap (weight percent)
C	0.03 – 0.2	0 – 1	0.03 – 0.2
Si	0.1 – 2.5	0.2 – 2.5	0.2 – 2.5
Mn	0 – 2.5	0.5 – 2.0	0.5 – 2.0
Ni + Co	30 – 47	38 – 72	38 – 47
Cr	19 – 22	15 – 29	19 – 22
Mo	0 – 3.0	0 – 5	0 – 3.0
Zr+Ti+Nb+Hf	0.01 – 7.5	0 – 2.0	0.01 – 2.0
W	0 – 1.0	0 – 5	0 – 1.0
N	0.001 – 0.5	0.013	0.013
O	0.001 – 0.7	0.013	0.013
Fe	Balance	12 – 35	Balance

Still regarding claim 8, Ritzert et al. discloses adding high purity fine particles such as hafnium oxide to superalloys that would be used in high temperature environments in order to improve high temperature reinforcement (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

In regards to claim 9, Herchenroeder (GB '386) discloses 0 to 1.0 weight percent carbon, which reads on the range of 0.3 to 0.5 weight percent carbon, as instantly claimed.

In regards to claim 10, Herchenroeder (GB '386) discloses 0 to 1.0 weight

percent carbon, which overlaps the range of 0.03 to 0.2 weight percent carbon as instantly claimed.

In regards to claim 11, Herchenroeder (GB ‘386) discloses 0 to 1.0 weight percent carbon and 0 to 2 weight percent hafnium, which overlap the ranges of 0.3 to 0.6 weight percent carbon and 0.01 to 3 weight percent hafnium, as instantly claimed.

In regards to claim 12, Herchenroeder (GB ‘386) discloses 0 to 1.0 weight percent carbon and 0 to 2.0 weight percent hafnium, which read on the ranges of 0.3 to 0.6 weight percent carbon and 0.1 to 1.0 weight percent hafnium as instantly claimed.

In regards to claim 13, Herchenroeder (GB ‘386) discloses 0 to 1.0 weight percent carbon and 0 to 2.0 weight percent hafnium, which read on the ranges of 0.3 to 0.6 weight percent carbon and 0.2 to 0.5 weight percent hafnium as instantly claimed.

In regards to claim 14, Herchenroeder (GB ‘386) discloses 0 to 1.0 weight percent carbon and up to 2 weight percent of zirconium, titanium, niobium and hafnium (page 1,line 43 – page 2, line 38).

In regards to claims 18-19, Ritzert et al. discloses that the high purity fine oxide particles would be less than 325 mesh (less than 44 microns), which overlaps the ranges of the sizes of the particles of the instant invention (column 1; page 5341).

With respect to the processing “produced by a method according to any one of claims 26 to 51" in claim 61, the Examiner notes that the claim is drawn to product and

not a process. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. MPEP 2113.

Claims 2, 14, 18-19 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herchenroeder (GB 1 373 386) in view of Ritzert et al. (Single crystal fibers of yttria-stabilized cubic zirconia with ternary oxide additions).

In regards to claim 2, Herchenroeder (GB '386) discloses a nickel-chromium-iron alloy composition having high hot strength (page 1, lines 12-25, page 1,line 43 – page 2, line 38). The table below provides the relative comparison of the alloy disclosed by Herchenroeder (GB '386) with the alloy of the instant invention.

Element	**Instant Claims (weight percent)**	**Herchenroeder (GB '386) (weight percent)**	**Overlap (weight percent)**
C	0.01 – 0.5	0 – 1	0.01 – 0.5
Si	0.1 – 2.5	0.2 – 2.5	0.2 – 2.5
Mn	0 – 2.5	0.5 – 2.0	0.5 – 2.0
Ni + Co	15 – 52.05	38 – 72	38 – 52.05
Cr	20 – 40	15 – 29	20 – 29
Mo	0 – 1.0	0 – 5	0 – 1.0
Zr+Ti+Nb+Hf	0.01 – 8.2	0 – 2.0	0.01 – 2.0
W	0 – 4.0	0 – 5	0 – 4.0
Al	0 – 15	0 – 0.22	0 – 0.22
Fe	Balance	12 – 35	Balance

Herchenroeder (GB '386) discloses a nickel-chromium-iron alloy composition that would be made by melting and casting (page 2, lines 39-65 and Examples I-II) as shown above, but Herchenroeder (GB '386) does not specify

the amounts of impurities (nitrogen and oxygen) that would be expected from casting.

Herchenroeder (GB ‘386) discloses a nickel-chromium-iron alloy as shown above, but Herchenroeder (GB ‘386) does not specify "that at least part of the hafnium is present as finely divided oxide particles".

Ritzert et al. discloses adding high purity fine particles such as hafnium oxide to superalloys that would be used in high temperature environments in order to improve high temperature reinforcement (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added high purity fine particles such as hafnium oxide, as disclosed by Ritzert et al., to the high temperature alloy, as disclosed by Herchenroeder (GB ‘386), in order to improve high temperature reinforcement, as disclosed by Ritzert et al. (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

In regards to claims 18-19, Ritzert et al. discloses that the high purity fine oxide particles would be less than 325 mesh (less than 44 microns), which overlaps the ranges of the sizes of the particles of the instant invention (column 1; page 5341).

With respect to the processing “produced by a method according to any one of claims 26 to 51" in claim 61, the Examiner notes that the claim is drawn to product and not a process. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of

a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. MPEP 2113.

Claims 1, 3-4, 7-13, 18-19 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yabuki et al. (JP 60-026644) with evidence from Deevi et al. (Exo-Melt^{TM} process for melting and casting intermetallics).in view of Ritzert et al. (Single crystal fibers of yttria-stabilized cubic zirconia with ternary oxide additions).

In regards to claim 1, Yabuki et al. (JP ‘644) discloses a nickel-chromium-iron alloy composition having superior properties at high temperatures (abstract). The table below provides the relative comparison of the alloy disclosed by Yabuki et al. (JP ‘644) with the alloy of the instant invention.

Element	**Instant Claims (weight percent)**	**Yabuki et al. (JP ‘644) (weight percent)**	**Overlap (weight percent)**
C	0.01 – 0.7	0.1 – 0.6	0.1 – 0.6
Si	0.1 – 3.0	0.1 – 3.0	0.1 – 3.0
Mn	0 – 2.5	0.1 – 2.0	0.1 – 2.0
Ni	15 – 90	5 – 30	15 – 30
Cr	5 – 40	15 – 33	15 – 33
Mo	0 – 3.0	0 – 5	0 – 3.0
Nb	0 – 2.0	0.1 – 3.0	0.1 – 2.0
Hf	0.01 – 4.5	0.001 – 0.45	0.01 – 0.45
Ta	0 – 2.0	0.1 – 3.0	0.1 – 2.0
Ti	0 – 2.0	0.1 – 3.0	0.1 – 2.0
Zr	0 – 2.0	0	0
Co	0 – 2.05	0	0
W	0 – 4.0	0	0
Al	0 – 15	0	0
N	0.001 – 0.5	-	-
O	0.001 – 0.7	-	-
Fe	Balance	Balance	Balance

Yabuki et al. (JP ‘644) discloses a nickel-chromium-iron alloy composition that would be made by melting and casting (abstract and page 4, lines 1-3) as shown above, but Yabuki et al. (JP ‘644) does not specify the amounts of impurities (nitrogen and oxygen) that would be expected from casting.

Deevi et al. discloses nickel-based alloys having high temperature corrosion made by melting and conventional casting techniques that would have 0.013 weight percent oxygen and 0.013 weight percent nitrogen (page 17, column 2 and page 25, column 2).

Therefore, it would be expected that the nickel-chromium-iron alloy made by melting and casting, as disclosed by Yabuki et al. (JP ‘644), would also have 0.013 weight percent oxygen and 0.013 weight percent nitrogen, as disclosed by Deevi et al., because Deevi et al. teaches that melting and conventional casting would result in the occurrence of impurities such as oxygen and nitrogen in the above specified amounts (page 17, column 2 and page 25, column 2).

Yabuki et al. (JP ‘644) with evidence from Deevi et al. discloses an alloy composition having niobium, and/or titanium present as shown above, but Yabuki et al. (JP ‘644) with evidence from Deevi et al. does not specify "that at least part of the hafnium is present as finely divided oxide particles".

Ritzert et al. discloses adding high purity fine particles such as hafnium oxide to alloys that would be used in high temperature environments such as turbines in order to improve high temperature reinforcement (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346,

column 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added high purity fine particles such as hafnium oxide, as disclosed by Ritzert et al., to the high temperature alloy, as disclosed by Yabuki et al. (JP ‘644) with evidence from Deevi et al., in order to improve high temperature reinforcement, as disclosed by Ritzert et al. (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

In regards to claim 3 Yabuki et al. (JP ‘644) with evidence from Deevi et al. discloses a nickel-chromium-iron alloy composition having high hot strength (abstract and page 4, lines 1-3). The table below provides the relative comparison of the alloy disclosed by Yabuki et al. (JP ‘644) with the alloy of the instant invention.

Element	**Instant Claims (weight percent)**	**Yabuki et al. (JP ‘644) (weight percent)**	**Overlap (weight percent)**
C	0.01 – 0.7	0.1 – 0.6	0.1 – 0.6
Si	0.1 – 2.5	0.1 – 3.0	0.1 – 3.0
Mn	0 – 2.5	0.1 – 2.0	0.1 – 2.0
Ni	30 – 40	5 – 30	15 – 30
Cr	20 – 30	15 – 33	15 – 33
Mo	0 – 3.0	0 – 5	0 – 3.0
Nb	0 – 2.0	0.1 – 3.0	0.1 – 2.0
Hf	0.01 – 4.5	0.001 – 0.45	0.01 – 0.45
Ta	0 – 2.0	0.1 – 3.0	0.1 – 2.0
Ti	0 – 2.0	0.1 – 3.0	0.1 – 2.0
Zr	0 – 2.0	0	0
Co	0 – 2.0	0	0
W	0 – 4.0	0	0
Al	0 – 15	0	0
N	0.001 – 0.5	-	-
O	0.001 – 0.7	-	-
Fe	Balance	Balance	Balance

Still regarding claim 3, Ritzert et al. discloses adding high purity fine particles such as hafnium oxide to superalloys that would be used in high temperature environments in order to improve high temperature reinforcement (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

In regards to claim 4, Yabuki et al. (JP ‘644) with evidence from Deevi et al. discloses a nickel-chromium-iron alloy composition having high hot strength (abstract and page 4, lines 1-3). The table below provides the relative comparison of the alloy disclosed by Yabuki et al. (JP ‘644) with the alloy of the instant invention.

Element	Instant Claims (weight percent)	Yabuki et al. (JP ‘644) (weight percent)	Overlap (weight percent)
C	0.03 – 0.2	0.1 – 0.6	0.1 – 0.2
Si	0.1 – 0.25	0.1 – 3.0	0.1 – 0.25
Mn	0 – 2.5	0.1 – 2.0	0.1 – 2.0
Ni	30 – 40	5 – 30	30
Cr	20 – 30	15 – 33	20 – 30
Mo	0 – 3.0	0 – 5	0 – 3.0
Nb	0 – 1.7	0.1 – 3.0	0.1 – 1.7
Hf	0.01 – 4.5	0.001 – 0.45	0.01 – 0.45
Ta	0 – 0.5	0.1 – 3.0	0.1 – 0.5
Ti	0 – 0.5	0.1 – 3.0	0.1 – 0.5
Zr	0 – 0.5	0	0
Co	0 – 2.05	0	0
W	0 – 1.0	0	0
Al	0 – 15	0	0
N	0.001 – 0.5	-	-
O	0.001 – 0.7	-	-
Fe	Balance	Balance	Balance

Still regarding claim 4, Ritzert et al. discloses adding high purity fine particles such as hafnium oxide to superalloys that would be used in high

temperature environments in order to improve high temperature reinforcement (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

In regards to claim 7, Yabuki et al. (JP ‘644) with evidence from Deevi et al. discloses a nickel-chromium-iron alloy composition having high hot strength (abstract and page 4, lines 1-3). The table below provides the relative comparison of the alloy disclosed by Yabuki et al. (JP ‘644) with the alloy of the instant invention.

Element	**Instant Claims (weight percent)**	**Yabuki et al. (JP ‘644) (weight percent)**	**Overlap (weight percent)**
C	0.3 – 0.7	0.1 – 0.6	0.3 – 0.6
Si	0.01 – 2.5	0.1 – 3.0	0.1 – 2.5
Mn	0 – 2.5	0.1 – 2.0	0.1 – 2.0
Ni	19 – 22	5 – 30	19 – 22
Cr	24 – 27	15 – 33	24 – 27
Mo	0 – 3.0	0 – 5	0 – 3.0
Nb	0 – 2.0	0.1 – 3.0	0.1 – 2.0
Hf	0.01 – 4.5	0.001 – 0.45	0.01 – 0.45
Co	0 – 2.0	0	0
W	0 – 1.0	0	0
Al	0 – 15	0	0
N	0.001 – 0.5	-	-
O	0.001 – 0.7	-	-
Fe	Balance	Balance	Balance

Deevi et al. discloses nickel-based alloys having high temperature corrosion made by melting and conventional casting techniques that would have 0.013 weight percent oxygen and 0.013 weight percent nitrogen (page 17, column 2 and page 25, column 2).

Therefore, it would be expected that the nickel-chromium-iron alloy made by melting and casting, as disclosed by Yabuki et al. (JP ‘644), would also have

0.013 weight percent oxygen and 0.013 weight percent nitrogen, as disclosed by Deevi et al., because Deevi et al. teaches that melting and conventional casting would result in the occurrence of impurities such as oxygen and nitrogen in the above specified amounts (page 17, column 2 and page 25, column 2).

Yabuki et al. (JP ‘644) with evidence from Deevi et al. discloses an alloy composition having niobium present as shown above, but Yabuki et al. (JP ‘644) with evidence from Deevi et al. does not specify "that at least part of the hafnium is present as finely divided oxide particles".

Ritzert et al. discloses adding high purity fine particles such as hafnium oxide to alloys that would be used in high temperature environments such as turbines in order to improve high temperature reinforcement (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added high purity fine particles such as hafnium oxide, as disclosed by Ritzert et al., to the high temperature alloy, as disclosed by Yabuki et al. (JP ‘644) with evidence from Deevi et al., in order to improve high temperature reinforcement, as disclosed by Ritzert et al. (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

In regards to claim 8, Yabuki et al. (JP ‘644) with evidence from Deevi

et al. discloses a nickel-chromium-iron alloy composition having high hot strength (abstract and page 4, lines 1-3). The table below provides the relative comparison of the alloy disclosed by Yabuki et al. (JP ‘644) with the alloy of the instant invention.

Element	Instant Claims (weight percent)	Yabuki et al. (JP ‘644) (weight percent)	Overlap (weight percent)
C	0.03 – 0.2	0.1 – 0.6	0.1 – 0.2
Si	0.01 – 2.5	0.1 – 3.0	0.1 – 2.5
Mn	0 – 2.5	0.1 – 2.0	0.1 – 2.0
Ni	30 – 45	5 – 30	30
Cr	19 – 22	15 – 33	19 – 22
Mo	0 – 3.0	0 – 5	0 – 3.0
Nb	0 – 2.0	0.1 – 3.0	0.1 – 2.0
Hf	0.01 – 4.5	0.001 – 0.45	0.01 – 0.45
Ti	0 – 0.5	0.1 – 3.0	0.1 – 0.5
Zr	0 – 0.5	0	0
Co	0 – 2.0	0	0
W	0 – 1.0	0	0
Al	0 – 15	0	0
N	0.001 – 0.5	-	-
O	0.001 – 0.7	-	-
Fe	Balance	Balance	Balance

Deevi et al. discloses nickel-based alloys having high temperature corrosion made by melting and conventional casting techniques that would have 0.013 weight percent oxygen and 0.013 weight percent nitrogen (page 17, column 2 and page 25, column 2).

Therefore, it would be expected that the nickel-chromium-iron alloy made by melting and casting, as disclosed by Yabuki et al. (JP ‘644), would also have 0.013 weight percent oxygen and 0.013 weight percent nitrogen, as disclosed by Deevi et al., because Deevi et al. teaches that melting and conventional casting would result in the occurrence of impurities such as oxygen and nitrogen in the above specified amounts (page 17, column 2 and page 25, column 2).

Yabuki et al. (JP ‘644) with evidence from Deevi et al. discloses an alloy composition having titanium and/or zirconium present as shown above, but Yabuki et al. (JP ‘644) with evidence from Deevi et al. does not specify "that at least part of the hafnium is present as finely divided oxide particles".

Ritzert et al. discloses adding high purity fine particles such as hafnium oxide to alloys that would be used in high temperature environments such as turbines in order to improve high temperature reinforcement (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added high purity fine particles such as hafnium oxide, as disclosed by Ritzert et al., to the high temperature alloy, as disclosed by Yabuki et al. (JP ‘644) with evidence from Deevi et al., in order to improve high temperature reinforcement, as disclosed by Ritzert et al. (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

In regards to claim 9, Yabuki et al. (JP ‘644) discloses 0.1 to 0.6 weight Percent, which overlaps reads on the range of 0.3 to 0.5 weight percent carbon, as instantly claimed.

In regards to claim 10, Yabuki et al. (JP ‘644) discloses 0.1 to 0.6 weight percent carbon, which overlaps the range of 0.03 to 0.2 weight percent carbon as instantly claimed.

In regards to claim 11, Yabuki et al. (JP ‘644) discloses 0.1 to 0.6 weight percent carbon and 0.001 to 0.45 weight percent hafnium, which read on the ranges of 0.3 to 0.6 weight percent carbon and 0.01 to 3 weight percent hafnium, as instantly claimed.

In regards to claim 12, Yabuki et al. (JP ‘644) discloses 0.1 to 0.6 weight percent carbon and 0.001 to 0.45 weight percent hafnium, which read on the ranges of 0.3 to 0.6 weight percent carbon and 0.1 to 1.0 weight percent hafnium, as instantly claimed.

In regards to claim 13, Yabuki et al. (JP ‘644) discloses 0.1 to 0.6 weight percent carbon and 0.001 to 0.45 weight percent hafnium, which read on the ranges of 0.3 to 0.6 weight percent carbon and 0.2 to 0.5 weight percent hafnium, as instantly claimed.

In regards to claims 18-19, Ritzert et al. discloses that the high purity fine oxide particles would be less than 325 mesh (less than 44 microns), which overlaps the ranges of the sizes of the particles of the instant invention (column 1; page 5341).

With respect to the processing limitation “produced by a method according to any one of claims 26 to 51" in claim 61, the Examiner notes that the claim is drawn to product and not a process. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different

process. MPEP 2113.

Claims 2, 18-19 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yabuki et al. (JP 60-026644).in view of Ritzert et al. (Single crystal fibers of yttria-stabilized cubic zirconia with ternary oxide additions).

In regards to claim 2, Yabuki et al. (JP ‘644) discloses a nickel-chromium-iron alloy composition having superior properties at high temperatures (abstract). The table below provides the relative comparison of the alloy disclosed by Yabuki et al. (JP ‘644) with the alloy of the instant invention.

Element	**Instant Claims (weight percent)**	**Yabuki et al. (JP ‘644) (weight percent)**	**Overlap (weight percent)**
C	0.01 – 0.5	0.1 – 0.6	0.1 – 0.5
Si	0.1 – 2.5	0.1 – 3.0	0.1 – 2.5
Mn	0 – 2.5	0.1 – 2.0	0.1 – 2.0
Ni	15 – 50	5 – 30	15 – 30
Cr	20 – 40	15 – 33	20 – 33
Mo	0 – 1.0	0 – 5	0 – 1.0
Nb	0 – 1.7	0.1 – 3.0	0.1 – 1.7
Hf	0.01 – 4.5	0.001 – 0.45	0.01 – 0.45
Ti	0 – 0.5	0.1 – 3.0	0.1 – 0.5
Zr	0 – 0.5	0	0
Co	0 – 2.0	0	0
W	0 – 1.0	0	0
Fe	Balance	Balance	Balance

Yabuki et al. (JP ‘644) discloses an alloy composition having titanium and niobium present as shown above, but Yabuki et al. (JP ‘644) does not specify "that at least part of the hafnium is present as finely divided oxide particles".

Ritzert et al. discloses adding high purity fine particles such as hafnium oxide to alloys that would be used in high temperature environments such as turbines in order to improve high temperature reinforcement (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346,

column 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added high purity fine particles such as hafnium oxide, as disclosed by Ritzert et al., to the high temperature alloy, as disclosed by Yabuki et al. (JP ‘644), in order to improve high temperature reinforcement, as disclosed by Ritzert et al. (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

In regards to claims 18-19, Ritzert et al. discloses that the high purity fine oxide particles would be less than 325 mesh (less than 44 microns), which overlaps the ranges of the sizes of the particles of the instant invention (column 1; page 5341).

With respect to the processing limitation “produced by a method according to any one of claims 26 to 51" in claim 61, the Examiner notes that the claim is drawn to product and not a process. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. MPEP 2113.

Claims 20-21, 55 and 60-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohta et al. (US 3,826,689) in view of Ritzert et al. (Single crystal fibers of yttria-stabilized cubic zirconia with ternary oxide additions).

In regards to claim 20-21, Ohta et al. (‘689) discloses a nickel-chromium-iron alloy composition having superior properties at high temperatures (abstract, col. 2, lines 17-21). The table below provides the relative comparison of the alloy disclosed by Ohta et al. (‘689) with the alloy of the instant invention (abstract and col. 4, line 53 – col. 5, line 50).

Element	**Instant Claim 20 (weight percent)**	**Ohta et al. (‘689) (weight percent)**	**Overlap (weight percent)**
C	0.42	0.1 – 1	0.42
Si	1.79	0.01 – 3	1.79
Mn	1.17	0.01 – 10	1.17
Ni	33.2	15 – 50	33.2
Cr	23.3	15 – 35	23.3
Mo	0.02	0 – 10	0.02
Nb	0.77	0 – 5	0.77
Hf	0.24	-	-
Al	1.54	0 – 5	1.54
Co	0.04	0 – 30	0.04
W	0.08	0 – 10	0.08
Fe	Balance	Balance	Balance

Ohta et al. (‘689) discloses an alloy composition as shown above, but Ohta et al. (‘689) does not specify "that at least part of the hafnium is present as finely divided oxide particles".

Ritzert et al. discloses adding high purity fine particles such as hafnium oxide to alloys that would be used in high temperature environments in order to improve high temperature reinforcement (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added high purity fine particles such as hafnium oxide, as disclosed by Ritzert et al., to the high temperature alloy, as

disclosed by Ohta et al. ('689), in order to improve high temperature reinforcement, as disclosed by Ritzert et al. (abstract; page 5339, column 1; page 5341, column 1; page 5344, column 1; and page 5346, column 1).

In regards to claims 55 and 60-61, Ohta et al. ('689) discloses using the alloy for tubes (col. 1, lines 50-62).

With respect to the processing limitation "by rotational moulding" in claims 55 and 60 and "produced by a method according to any one of claims 26 to 51" in claim 61, the Examiner notes that the claim is drawn to product and not a process. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. MPEP 2113.

Response to Arguments

Applicant's arguments filed 19 January 2009 have been fully considered but they are not persuasive.

First, the Applicant primarily argues that Deevi et al. relates to Ni-Al intermetallic materials and a comparison of the intermetallic composites in Table 6 on page 25 of Deevi et al. with the compositions of Kleeman ('847) reveals various differences that would impact the concentrations of oxygen and nitrogen described therein and Deevi et

al. cannot be used as evidence of nitrogen and oxygen concentrations in the compositions of Kleeman ('847) and in the instant application.

In response, the Examiner notes that Kleeman (‘847) discloses both nickel and aluminum in the alloy and thus $NiAl_3$ would be expected to form in the alloy of Kleeman (‘847). Furthermore, the Examiner notes that Kleeman (‘847) discloses a conventional melting process (col. 2, lines 40-46) and Table 6 on page 25 of Deevi et al. discloses what one skilled in the art would expect the oxygen and nitrogen levels to be in a conventional melting process.

Second, the Applicant primarily argues that Ritzert et al. fails to teach that fine particles of hafnium oxide are added to the alloy composition. The Applicant further argues that only ZrO_2-14Y_2O_5-5HfO_2 fibers are taught in Ritzert et al. and these fibers are not finely divided hafnium oxide particles as recited in the various exemplified embodiments of the present invention.

In response, the Examiner notes that Ritzert et al. discloses that the high purity fine oxide particles would be less than 325 mesh (less than 44 microns), which overlaps the ranges of the sizes of the particles of the instant invention (column 1; page 5341). In order to achieve "less than 325 mesh", the particles would have had to been divided somehow, such as via a sieve.

Third, the Applicant primarily argues that Barraclough (GB '499) is drawn to austenitic alloys of iron, chromium and nickel with further additions of aluminum and titanium, with or without additions of either hafnium or yttrium and none of the alloys in

Barraclough (GB '499) teach or suggest having oxygen and nitrogen in the percentage ranges as exemplified in various embodiments of the present application because Deevi et al. relates to Ni-Al intermetallic materials and differs from the compositions of Barraclough (GB '499) and the present application. The Applicant further argues that a comparison of the intermetallic composites in Table 6 on page 25 of Deevi et al. with the compositions of Barraclough (GB '499) reveals various differences that would impact the concentrations of oxygen and nitrogen described therein and Deevi et al. cannot be used as evidence of nitrogen and oxygen concentrations in the compositions of Barraclough (GB '499) and in the instant application.

In response, the Examiner notes that Barraclough (GB '499) discloses incidental amounts of other alloying elements (abstract) and a conventional melting process (page 1, lines 38-42). Therefore, the presence of oxygen and nitrogen at about 0.013 weight percent would be expected. Furthermore, Barraclough (GB '499) discloses the presence of both nickel and aluminum and $NiAl_3$ would be expected to form in the alloy of Barraclough (GB '499).

Fourth, the Applicant primarily argues that Herchenroeder (GB '386) fails to teach the alloy compositions described specifically by teaching "Although various other common alloying ingredients such as zirconium, titanium, columbium or hafnium can be tolerated in small amounts in the present invention, they are merely incidental hereto and will generally be restricted to connate or adventitious amounts e.g. 1 or 2% by weight of the alloy.". Therefore, hafnium is not critical and need not be included in the composition.

In response, the normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges (0 to 2 weight percent hafnium) is the optimum combination of percentages. MPEP 2144.05 II.

Fifth, the Applicant primarily argues that a comparison of the intermetallic composites in Table 6 on page 25 of Deevi et al. with the compositions of Herchenroeder (GB '386) reveals various differences that would impact the concentrations of oxygen and nitrogen described therein and Deevi et al. cannot be used as evidence of nitrogen and oxygen concentrations in the compositions of Herchenroeder (GB '386) and in the instant application.

In response, the Examiner notes that Herchenroeder (GB '386) discloses a the presence of trace elements and a conventional melting process (page 2, lines 28-50) Therefore, the presence of oxygen and nitrogen at about 0.013 weight percent, as disclosed by Deevi et al., would be expected. Furthermore, Herchenroeder (GB '386) discloses the presence of both nickel and aluminum and $NiAl_3$ would be expected to form in the alloy of Herchenroeder (GB '386).

Sixth, the Applicant primarily argues that Ritzert et al. fails to teach that fine particles of hafnium oxide are added to the alloy composition. The Applicant further argues that only ZrO_2-$14Y_2O_5$-$5HfO_2$ fibers are taught in Ritzert et al. and these fibers are not finely divided hafnium oxide particles as recited in the various exemplified embodiments of the present invention.

In response, the Examiner notes that Ritzert et al. discloses that the high purity

fine oxide particles would be less than 325 mesh (less than 44 microns), which overlaps the ranges of the sizes of the particles of the instant invention (column 1; page 5341). In order to achieve "less than 325 mesh", the particles would have had to been divided somehow, such as via a sieve.

Seventh, the Applicant primarily argues that a comparison of the intermetallic composites in Table 6 on page 25 of Deevi et al. with the compositions of Yabuki (JP '644) reveals various differences that would impact the concentrations of oxygen and nitrogen described therein and Deevi et al. cannot be used as evidence of nitrogen and oxygen concentrations in the compositions of Yabuki (JP '644).

In response, the Examiner notes that Yabuki (JP '644) discloses the presence of impurities in addition to a conventional melting process (air melting) (claim 2 and page 202, col. 2). Therefore, the presence of oxygen and nitrogen at about 0.013 weight percent, as disclosed by Deevi et al., would be expected.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessee Roe whose telephone number is (571)272-5938. The examiner can normally be reached on Monday-Thursday and alternate Fridays 7:00 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/

Supervisory Patent Examiner, Art Unit 1793

JR